

USPTO Customer No. 25280
Serial No: 10/764,234

Inventor(s): Batlaw et al
Case No: 5729

IN THE CLAIMS

1. (Currently Amended) In a two stage process of injection stretch blow molding polypropylene to form a container, wherein a first stage comprises forming a preform article, and a second stage comprises reheating and blow molding the preform article to form a high clarity container, the first stage comprising the steps of:

(a) providing a chemical composition comprising polypropylene, said chemical composition having a melt flow index in the range of between about 6 and about 50 grams/10 minutes, according to ASTM D 1238;

(b) injecting said chemical composition into a mold-at a fill rate of greater than about 5 grams of chemical composition per second;

(c) forming said chemical composition into a preform article, said preform article having a closed end connected to a side wall, said side wall having a maximum thickness of ~~less than~~ from about 2 mm to about 4 3-5 mm; and

(d) removing said preform article from said mold.

2. (Original) The process of claim 1 further comprising the steps of:

(e) reheating said preform article; and

(f) stretch blow molding said preform article to form a container.

3. (Canceled)

4. (Original) The process of claim 1 wherein said injection step (b) provides said chemical composition into said mold at a fill rate of about 5 - 22 grams/second.

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5. (Original) The process of claim 1 wherein said chemical composition comprises an ethylene/propylene copolymer.
6. (Original) The process of claim 1 wherein said chemical composition further comprises a nucleating agent.
7. (Original) The process of claim 6 wherein said nucleating agent comprises a dibenzylidene sorbitol compound (DBS), or a derivative thereof.
8. (Original) The process of claim 6 wherein said nucleating agent comprises sodium 1,3-O-2, 4-bis(4-methylbenzylidene) sorbitol and derivatives thereof.
9. (Withdrawn) The process of claim 6 wherein said nucleating agent comprises sodium benzoate and derivatives thereof.
10. (Withdrawn) The process of claim 6 wherein said nucleating agent comprises 1,2-cyclohexanedicarboxylate salts and derivatives thereof.
11. (Withdrawn) The process of claim 6 wherein said nucleating agent comprises aluminum 4-*tert*-butylbenzonate and derivatives thereof.

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12. (Withdrawn) The process of claim 6 wherein said nucleating agent comprises metal salt(s) of cyclic phosphoric esters and derivatives thereof.

13. (Original) The process of claim 6 wherein said nucleating agent comprises bis(3,4-dialkylbenzylidene) sorbitol acetal or derivatives thereof.

14. (Original) The process of claim 6 wherein said nucleating agent comprises 1,3-O-2,4-bis(3,4-dimethylbenzylidene) sorbitol or derivatives thereof.

15. (Withdrawn) The process of claim 6 wherein said nucleating agent comprises disodium bicyclo[2.2.1]heptanedicarboxylate or derivatives thereof.

16. (Original) The process of claim 1 wherein said chemical composition comprises a at least one species of polypropylene homopolymer.

17. (Original) The process of claim 1 wherein said chemical composition comprises a polypropylene random copolymer.

18. (Original) The process of claim 1 wherein said chemical composition comprises a polypropylene block copolymer.

19. (Canceled)

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20. (Original) The process of claim 2 wherein said stretch blow molding step (f) is repeated successively in a manufacturing operation at a rate of container production of greater than about 900 containers per hour per mold.

21. (Original) The process of claim 2 wherein said stretch blow molding step (f) is repeated successively in a manufacturing operation at a rate of container production of at least about 1200 containers per hour per mold.

22. (Original) The process of claim 2 wherein said blow molding step (f) is repeated successively in a manufacturing operation at a rate of container production of at least about 1500 containers per hour per mold.

23. (Withdrawn) A preform article formed by employing the process of claim 1.

24. (Withdrawn) A container formed by employing the process of claim 2.

25. (Original) The process of claim 2 wherein said container provides a haze to thickness ratio expressed as a percent haze/mils of less than about 0.05.

26. (Currently Amended) A process for forming a polypropylene preform article to be used in the manufacture of a high clarity container, said process comprising the steps of:

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- (a) providing a chemical composition comprising in part polypropylene, said chemical composition having a melt flow index in the range between about 13 and about 35 grams/10 minutes, according to ASTM D 1238;
- (b) injecting said chemical composition into a mold, at a fill rate of greater than about 5 grams of chemical composition per second;
- (c) forming said chemical composition into a preform article, said preform article having a closed end and a side wall, said closed end being adapted for subsequent second stage reheating and stretch blow molding, said side wall of said preform article having a thickness of less than from about 2 mm to about 4 3.5 mm; and
- (d) removing said preform article from said mold.

27. (Canceled)

28. (Withdrawn) The process of claim 26, wherein said chemical composition further comprises a nucleating agent.

29. (Withdrawn) The process of claim 28 wherein said nucleating agent is selected from the group of agents consisting of: dibenzylidene sorbitol-containing compounds, sodium benzoate, cyclohexanedicarboxylate salts, aluminum 4-*tert*-butylbenzoate, metal salts of phosphoric esters, and derivatives thereof.

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30. (Original) The process of claim 28 wherein said nucleating agent comprises 1,3-O-2,4-bis(3,4-dimethylbenzylidene) sorbitol (DMDBS) or derivatives thereof.

31. (Withdrawn) The process of claim 28 wherein said nucleating agent comprises disodium bicyclo[2.2.1]heptanedicarboxylate or derivatives thereof.

32. (Original) The process of claim 26 wherein said injection step provides said chemical composition into said mold at a fill rate of about 5 - 22 grams/second.

33. (Canceled)

34. (Canceled)

35. (Original) The process of claim 26 wherein said fill rate in said step (b) is about 5-11 g/s and said preform side wall thickness is about 2 mm.

36. (Original) The process of claim 26 wherein said fill rate in said step (b) is about 5-13 g/s and said preform side wall thickness is about 3 mm.

37. (Original) The process of claim 26 wherein said fill rate in said step (b) is about 5-17 g/s and said preform side wall thickness is about 4 mm.

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38. (Withdrawn) The preform article formed by the process of claim 26.

39. (Original) The process of claim 26, further comprising the steps of:

(e) reheating said preform article; and

(f) stretch blow molding said preform article to form a container.

40. (Withdrawn) The container formed by employing the process of claim 39.

41. (Original) A process comprising the steps of:

(a) providing a chemical composition comprising polypropylene, said chemical composition having an MFI in the range of between about 13 and about 35 grams/10 minutes, according to ASTM D 1238;

(b) injecting said chemical composition into a mold at a fill rate of greater than about 5 grams of chemical composition per second;

(c) forming said chemical composition into a preform article, said preform article having a side wall thickness of about 2 mm; and

(d) removing said preform article from said mold.

42. (Original) The process of claim 41 wherein further comprising the steps of:

(e) reheating said preform article; and

(f) stretch blow molding said preform article to form a container.

43. (Withdrawn) A preform article formed using the process of claim 41.

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44. (Withdrawn) A container formed using the process of claim 42.

45. (Original) A process comprising the steps of:

(a) providing a chemical composition comprising polypropylene, said chemical composition having an MFI in the range of between about 13 and about 35 grams/10 minutes, according to ASTM D 1238;

(b) injecting said chemical composition into a mold at a fill rate of greater than about 5 grams of chemical composition per second;

(c) forming said chemical composition into a preform article, said preform article having a side wall thickness of about 3 mm; and

(d) removing said preform article from said mold.

46. (Original) The process of claim 45 wherein further comprising the steps of:

(e) reheating said preform article; and

(f) stretch blow molding said preform article to form a container.

47. (Withdrawn) A preform article formed using the process of claim 45.

48. (Withdrawn) A container formed using the process of claim 46.

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49. (Currently Amended) A process for making a perform, wherein said perform may be adapted for manufacture of a high clarity polypropylene container, said process comprising the steps of:

(a) providing a chemical composition comprising polypropylene, said chemical composition having an MFI in the range of between about 13 and about 35 grams/10 minutes, according to ASTM D 1238;

(b) injecting said chemical composition into a mold at a fill rate of greater than about 5 grams of chemical composition per second;

(c) forming said chemical composition into a preform article, said preform article having a side wall thickness of about 2 to about 4 mm; and

(d) removing said preform article from said mold.

50. (Withdrawn) The process of claim 49 wherein further comprising the steps of:

(e) reheating said preform article; and

(f) stretch blow molding said preform article to form a container.

51. (Withdrawn) A preform article formed using the process of claim 49.

52. (Withdrawn) A container formed using the process of claim 50.

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53. (Withdrawn) A process comprising the steps of:

(a) providing a chemical composition comprising polypropylene, said chemical composition having an MFI in the range of between about 13 and about 35 grams/10 minutes, according to ASTM D 1238, said chemical composition further comprising a nucleating agent, said nucleating agent comprising at least in part 1,3-O-2,4-bis(3,4-dimethylbenzylidene) sorbitol (DMDBS) or derivatives thereof;

(b) injecting said chemical composition into a mold at a fill rate of between about 5 and about 22 grams of chemical composition per second;

(c) forming said chemical composition into a preform article, said preform article having a side wall thickness of between about 2 mm and about 4 mm; and

(d) removing said preform article from said mold.

54. (Withdrawn) A preform article formed according to the process of claim 53.

55. (Withdrawn) The process of claim 53 wherein further comprising the steps of:

(e) reheating said preform article; and

(f) stretch blow molding said preform article to form a container.

56. (Canceled)

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57. (Original) A process comprising the steps of:

(a) providing a chemical composition comprising polypropylene, said chemical composition having an MFI in the range of between about 13 and about 35 grams/10 minutes according to ASTM D 1238, said chemical composition further comprising a nucleating agent, said nucleating agent comprising at least in part a p-methyl substituted benzaldehyde sorbitol compound or derivatives thereof;

(b) injecting said chemical composition into a mold-at a fill rate of between about 5 and about 22 grams of chemical composition per second;

(c) forming said chemical composition into a preform article, said preform article having a wall thickness of between about 2 mm and about 4 mm; and

(d) removing said preform article from said mold.

58. (Original) A preform article formed according to the process of claim 57.

59. (Original) A process comprising the steps of:

(a) providing a chemical composition comprising polypropylene, said chemical composition having an MFI in the range of between about 13 and about 35 grams/10 minutes, according to ASTM D 1238, said chemical composition further comprising a nucleating agent, said nucleating agent comprising at least in part disodium bicyclo[2.2.1]heptanedicarboxylate or derivatives thereof;

(b) injecting said chemical composition into a mold, at a fill rate of between about 5 and about 22 grams of chemical composition per second;

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(c) forming said chemical composition into a preform article, said preform article having a wall thickness of between about 2 mm and about 4 mm; and

(d) removing said preform article from said mold.

60. (Original) A preform article formed according to the process of claim 59.

61. (Original) The process of claim 59 wherein further comprising the steps of:

(e) reheating said preform article; and

(f) stretch blow molding said preform article to form a container.

62. (Original) A container formed according to the process of claim 61.

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